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who show real capacity, and the persistency required to bring things to a conclusion. This type of organization is the one in keeping with the highest requirements of modern science, where a work is allotted by choice or natural selection to a man, and he is given the opportunity to develop it. If in such a body of men cooperating for a common good, there should enter jealousy, dissension and rivalry, the end will be defeated, but by no fault of the system. The astronomers of the United States should consider seriously whether it is wise to debase an organization which gives the utmost possible freedom to the individual astronomer, and supplant it with a scheme where authority at the top limits the scope of operations to the will of one man.

The executive in the large Government surveys is so far burdened down with administrative duties, finances, correspondence, mediation between Congress and the public, that it is quite impracticable for him to devote energy to the advanced problems of the day. A scientist can take up these duties only by abandoning his researches, and it is little more than a dream to suppose that one can carry both along together. The proper attitude is that of co-operation between the administrator and the astronomer engaged in practical research, and I am quite persuaded that the officers of the Navy, in the Bureau and at the Observatory, have been quite as faithful to their duties as the astronomers to their tasks. Lack of co-operation, from whatever cause it may arise, is not to be remedied by legislation; this may destroy the free chance to cooperate by introducing subordination, but it would be a step backward, and it should be taken only when a body of American astronomers can not be selected, who are willing to make the most of their splendid opportunities. Furthermore, the attachment of the Observatory to the Navy Department has been the source of its prosperity, in that it has thus secured liberal and generous congressional action through half a century. Now Congress has not yet felt that its duty lies in establishing and supporting an astronomical observatory for research only, no matter how valuable this might be to the world at large. Its theory is that a practical *quid pro quo* must

be given for the people's money. The fact that the Navy needs a Nautical Almanac and a time service, and that these are practical utilities has been the ground for the annual appropriations. There is no other Department of the Government better fitted to press such claims upon Congress than the Navy, and to abandon this utilitarian ground would be to diminish the financial resources of the institution. As matters now stand there is no prospect of being able to persuade Congress to support such a research observatory; under the circumstances the nearest we can come to it is the free cooperation of the astronomers in the Naval Observatory. If these 'lay down' behind their commissions, or if their 'human nature' is too much for their good sense and the progress of science, there is no question where the responsibility should be placed. If it be true that the past generation at the Observatory, consisting of able, honorable men, failed to accomplish all they expected to do, may we not hope that the spirit of mutual cooperation between the executive and scientific staff, and the professors one with another, may still be the true remedy, rather than an angry discussion or any type of restrictive legislation which could be devised?

FRANK H. BIGELOW.  
WASHINGTON, D. C., January, 10, 1901.

#### POTASSIUM NITRATE IN WYOMING.

LAST fall Mr. Victor Milward, of Dayton, Wyoming, sent me a small package of mineral which he wished tested for nitrates. The sample was a dark brown color, pulverent and contained a large amount of sand. Upon testing the substance I recognized that it was a nitrate and, in looking for the base, potassium was found in unusual quantities. Mr. McClelland an instructor in this department made a preliminary analysis and found that the sample contained upwards of fifty per cent. of potassium nitrate, and that it was nearly pure. Sodium was not detected. Mr. Milward was informed of his discovery and encouraged in making further investigations, and also asked to furnish some data as to his discovery and its extent. Later a number of samples of dark colored sandstone were received, that had been taken from

various depths and also a specimen from the surface of the prospect. The samples did not contain any of the salt except the one taken from the very surface. On this the nitrate was a coating about a quarter of an inch in thickness, and, as the previous sample sent, was approximately pure potassium nitrate. So far, the salt found is in very limited quantities and there are no explanations to offer for its existence or accumulation. It is evident that it has been brought in and deposited upon the sandstone but the source has not been detected. Owing to the winter months being close at hand when the discovery was made, it was not possible to carry on any extended examination. Potassium nitrate has been found in very minute quantities in the Leucite hills by Cross ; this, however, is the most important discovery ever made in the State, and may result in the location of nitrate deposits of commercial importance.

WILBUR C. KNIGHT.

GEOLOGICAL LABORATORY,  
UNIVERSITY OF WYOMING,  
Jan. 16, 1901.

#### CURRENT NOTES ON PHYSIOGRAPHY.

##### SOUTHERN WISCONSIN.

'THE Geography of the Region about Devil's Lake and the Dalles of the Wisconsin' by R. D. Salisbury and W. W. Atwood (*Wis. Geol. and Nat. Hist. Survey*, Bull. v, Educational series, 1, Madison, 1900), is a significant publication if for no other reason than that it is concerned with geographical features and that it is a State publication 'primarily designed for use in the schools.' State surveys have been very slow in coming to recognize their responsibility in this direction ; and we are glad to see Wisconsin now following Missouri, New Jersey and Maryland. The region described includes a typical resurrected mountain, Baraboo ridge, of Huronian quartzite, adjoined by a plain of erosion, too smooth over much of its extent to be called a peneplain, formed by the removal of paleozoic strata which once buried the ridge, and which still remain in isolated castle-like hills here and there over the plain, and more continuously in hilly uplands farther southwest. The Dalles of the Wisconsin river are cut in the plain where the

river has been displaced by glacial action from its former course. The 150 pages of the report are illustrated by 38 plates and 47 figures, and closed with a good index.

#### THE ISLANDS OF SOUTHERN CALIFORNIA.

'A TOPOGRAPHIC Study of the Islands of Southern California,' by W. S. Tangier Smith (Bull. Dept. Geol., Univ. Cala., ii, 1900, 179-230) presents additional details concerning the features of this interesting group. The author points out that on a single shore line a wave-cut terrace of much strength may be developed where the coast has a moderate resistance and gentle slope, while hardly any shore marking is made where the coast is more resistant and of steeper slope. On San Clemente the rocks are relatively resistant and the general slope of the island is moderate ; here wave-cut terraces at various levels have been remarkably developed and wonderfully preserved.

The occurrence of such terraces suggests some observations regarding the origin of those plains of erosion which now stand somewhat above sea level and are moderately dissected by streams, as in the Piedmont district of eastern Virginia and in the peninsula of Brittany. On both these plains the broad uplands are sheeted over with heavy soils of local weathering ; the valleys that dissect the uplands are narrow and steep-sided. If the plains were of subaërial origin the abundant soils would be an appropriate feature ; if the plains were the result of marine abrasion, the soils must have been developed by weathering on the wave-cut rock floor in the same period of time as that required for the erosion of the narrow valleys. The terraces of San Clemente may perhaps afford means of comparing the rate of soil production and valley erosion, and thus of giving further evidence regarding the origin of the districts in question.

#### DEECKE'S ITALIEN.

A WORK on the general geography of a country should not be criticised too closely with regard to its physiographic chapters, for there are many other lines toward which the chief interest of the author may have been drawn more strongly. It is nevertheless instructive to examine the method of treating land forms